

## ABSTRACT OF THE DISCLOSURE

Optical systems for cooling optoelectronic elements are provided. A representative optical system includes a substrate and a first optoelectronic element supported by the substrate. Additionally, a first channel is formed in the substrate and  
5 a first heat transfer fluid is arranged in the first channel. The first heat transfer fluid is thermally coupled with the first optoelectronic element so that at least a quantity of heat produced by the first optoelectronic element is dissipated by the first heat transfer fluid. Methods and other systems also are provided.